

Financial services for small and medium-scale aquaculture and fisheries producers

Ulrich Kleih*, John Linton, Ana Marr, Murdoch Mactaggart¹, Diego Naziri, John E. Orchard

Natural Resources Institute (NRI), University of Greenwich, Medway Campus, Central Avenue, Chatham Maritime, Kent ME4 4TB, UK

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ABSTRACT

This article summarises the results of case studies carried out in six developing countries. The case studies analyse the economics of small and medium-scale aquaculture and fisheries enterprises, in particular their capital requirement to cover investment and operating costs, and discuss the demand and supply of financial services. Given that capture fisheries face problems in many parts of the world due to stagnating or declining stocks, it is likely that in the future aquaculture, including mariculture, will have to play an increasing role in supply. In order to achieve sustainable growth in aquaculture businesses in sub-Saharan Africa a range of constraints—technical and financial—need to be overcome. Traditional financial instruments seem unable to meet the financial needs of small and medium-scale enterprises (SMEs) in the aquaculture and fisheries sector. Accordingly, innovative financial models for SMEs need to be developed to fill the gap between traditional banking and grant-based donor finance. One key characteristic of investment funds specialising in SMEs in Africa is the combination of investment funds with business development funds in order to ensure the economic growth of SMEs as well as the likelihood of prompt loan repayment.

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1. Introduction

The fisheries and aquaculture value chains in developing countries, in particular Africa, have consistently under-performed in spite of significant investment over the last five decades. Africa is unable to meet its own consumption needs due to inadequate infrastructure, value chain governance and input supply (particularly local feed), and therefore has to import fish products. Although there are exceptions, a common feature is the absence of a well-supported entrepreneurial, dynamic small and medium-scale enterprise (SME) sector. Several studies [1,2] have broadly identified the lack or inadequate access to financial service as one of the key constraints to their development.

The New Partnership for Africa's Development (NEPAD) Action Plan for the Development of African Fisheries and Aquaculture [1] indicates that a specific effort will have to be made to facilitate access to financial institutions, in particular for the small-scale operators and the local grass-root organisations that support these small-scale operators. Financial institutions are often

remote from fish farmers or from fishing communities, both geographically and in terms of understanding their needs.

In Egypt the lack of access to credit is considered among the most important constraints to the development of fish farming [3]. Similarly, Zwirin [4] and El-Gayar [5] state that inequity in access to capital may be the main obstacle to successful long-term development of a high-yield, politically and socially viable aquaculture sector in Egypt.

Broadbent [6] highlights that there is need for financial services within fishing communities of Lake Victoria. Interestingly, the key needs were most often reported in the following order: (a) sensitisation and education regarding savings and credit; (b) credit facilities; (c) savings facilities; (d) money transfer facilities. Nzeh's and Adebayo's [7] research on constraints to fish farming as an income generating activity among women in Nigeria shows that financial capacity is the main limiting factor. Even in developed economies such as the United States, obtaining capital for aquaculture can be difficult for current or potential aquaculture producers. Major constraints include the perceived high risk and high investment nature compared to a low return on investment [8].

Tietze and Villareal [2] state that while the concepts and principles of microfinance have a general applicability there are particular considerations unique to fishing communities that may require special attention. These include risk and the lack of fixed collateral in fishing communities. At the same time, informal

* Corresponding author. Tel.: +44 1634 883065; fax: +44 1634 883706.
E-mail addresses: u.kleih@gre.ac.uk (U. Kleih), j.linton@gre.ac.uk (J. Linton), a.marr@gre.ac.uk (A. Marr), press@textbiz.com (M. Mactaggart), d.naziri@gre.ac.uk (D. Naziri), j.e.orchard@gre.ac.uk (J.E. Orchard).

¹ Freelance journalist and writer.

sources generally meet short-term credit needs rather than medium- and long-term financial requirements. Further, their terms of finance are often disadvantageous for fishers since they charge high rates of interest and credit is frequently linked to unfavourable terms of trade and the establishment of exploitative relationships. In view of this Tietze and Villareal [2] conclude that without appropriate institutional credit arrangements an important link is missing in the fishery industry and the optimum utilisation and allocation of human and marine resources and capital in the fishery industry are hampered. This applies to medium- and large-scale credit programmes as well as to microfinance and microcredit programmes.

According to a study by Lem et al. [9] on fish marketing and credit in Vietnam, future credit support should focus on making the fleet more efficient and sustainable rather than expanding it. The study also highlights that while state-owned financial institutions play a major role in financing capital expenditure, working capital requirements are mainly met by informal sources of credit.

Improved access to credit might support the development of the sector, similarly to the provision of subsidies. However, a study by the United Nations Environment Programme (UNEP) [10] argues that subsidies to capital costs are expected to be harmful in all circumstances unless the fisheries management system provides for property rights, community-based management, or other means for eliminating economic incentives to overfish. They can be harmful even in fisheries that are less than fully exploited where subsidies to capital costs encourage the adoption of much more powerful fishing technologies, potentially causing an overshoot in fleet capacity well beyond a biologically sustainable level. Examples of fisheries' subsidies in developing countries include provision of subsidised or tax exempt fuel; duty concessions on the purchase of gear and equipment; provision of subsidised loans; capacity building such as skill training; fisheries management and research; licence fees paid to government; infrastructure projects such as landing sites or fish markets [11].

There is little doubt that various forms of fisheries' subsidies have contributed to overfishing by many fisheries worldwide. FAO [12] does voice concern about the state of stocks exploited by marine capture fisheries. According to the World Bank [13], capture fisheries is an industry in crisis as the natural resource limits of the oceans, coastal regions, and many inland water bodies have been reached.

Any decision to enhance the access to credit in the sector should be taken in light of the above comments. It appears difficult to justify measures to provide further credit to enhance the capacity of capture fisheries but there are nevertheless other forms of financial services that need strengthening in the communities concerned. For instance, lack of access to credit in order to help meet the substantial capital requirements at the beginning of an aquaculture project, and so help mitigate the high risks, is seen as a major constraint.

However in the literature there is a paucity of analyses that investigate in combination the financial need and the existing options for funding, either formal or informal, which is available to SMEs. The present study aims at filling this gap by looking at the current financial environment in six developing countries from the perspective of both the SME end users and the financial institutions (formal and informal).

2. Material and methods

Research was undertaken to analyse how small to medium enterprises involved in the fisheries and aquaculture sector meet their financial needs, both in establishing their businesses

(investment) and in running them (cash flow), and the credit supply and financial services available to them in the following sectors of six developing countries:

- Egypt—aquaculture (mainly tilapia);
- Ghana—mainly capture fisheries, touching on aquaculture;
- Maldives—mainly tuna capture fisheries;
- South Africa—mainly capture fisheries (hake, squid, tuna);
- Tanzania—mainly Nile perch capture fisheries, touching on aquaculture;
- Vietnam—aquaculture (shrimp and pangasius).

The research began with a critical review of published and grey literature (e.g. donor and project reports) of the fisheries and aquaculture sector in each of the six countries to assess:

- broad segmentation of the fisheries and aquaculture sector;
- geographic distribution of fisheries and aquaculture activities;
- production trends and forecasts;
- markets and market forecasts;
- value chain of the fisheries systems;
- government aspirations and targets for the aquaculture sector;
- financial and operational support available to those involved in the sector.

This was followed in late 2010/early 2011 by interviews in each country with stakeholders in fisheries/aquaculture SMEs (covering both producers and traders) and the financial institutions (both informal and formal such as agriculture development banks and private banks). Key informants (e.g. government fisheries officers) in each country were used to select candidates for interview (typically numbering 4–6 interviewees in each category e.g. marine fishers, traders and bank officials). Semi-structured interviews were conducted (either individually or as focus groups) using checklists and interview guidelines. Issues addressed with SMEs included the basic economics of the business (such as investment costs, annual turnover, recurrent costs of production, profitability), their financing requirements in relation to investment and cash flow, and if these needs are being met. Interviews with formal financial institutions sought to understand their current lending policies in the sector and their perceptions of rewards and risks of investment in the fisheries/aquaculture sector.

3. Results

3.1. Overview of fisheries sectors

The fisheries sector differs from country to country in the six surveyed. In Ghana, for instance, fishing has traditionally been very important and most fishing is marine but with a small amount from inland water and with virtually no aquaculture. In contrast Egypt has the largest aquaculture sector in Africa. Vietnam also has a large aquaculture sector while in both South Africa and Tanzania that sector is nascent or very small but with potential. Tanzania's main focus is on inland fisheries, principally on Lake Victoria, and it's the largest exporter of Nile perch products to the EU. In South Africa, in part on account of water scarcity, the inland fishing sector is small while marine fishing, including game fishing, is an important sector. In the Maldives marine fishing has, as with Ghana, a very long tradition but has had its share of problems including a sudden loss of tuna shoals; nevertheless the sector has responded and worked successfully to find new markets.

More detail on the fisheries sector in individual countries is given immediately below and in Table 1.

Table 1
Fisheries and aquaculture sectors in the case study countries.
Source: literature review.

	Aquaculture	Capture Fisheries
Egypt	Largest aquaculture industry in Africa, accounting for almost 65% of the total fish production of the country. Total aquaculture production in 2008 reached 694,000 t, almost entirely on private farms.	Following peak production in 2003, capture fisheries has been slowly declining to below 400,000 t.
Ghana	Aquaculture only covers a small proportion of production (5,000 t). Imports (mostly of low quality fish) account for nearly 50% of national consumption. Aquaculture sector would appear to be the only opportunity for import substitution, although significant technical and financial challenges have to be addressed.	Most of the catch comes from marine fisheries (400,000 t annually) followed by inland waters (40,000). Artisanal marine fisheries account for 70% of the total catch. The capture sector has been declining over the last decade.
Maldives	Small aquaculture/mariculture production.	Fishing, processing and marketing of tuna (skipjack and yellowfin) is a traditional activity in the Maldives. Following a peak in 2005/06 (~180,000 t) production declined to less than 50% of that figure by 2010. Nonetheless, despite recent financial difficulties in the sector, the fisheries sector continues to operate and innovate.
South Africa	Water is scarce and partly in consequence the aquaculture sub-sector is insignificant. There is some mariculture of molluscs and seaweed.	The fisheries sector is primarily marine-based with a strong commercial orientation (e.g. hake, squid, and tuna). The total commercial catches fluctuate annually.
Tanzania	Aquaculture production is at a very early stage.	The fisheries sector is dominated by the artisanal Nile perch fishing on Lake Victoria. Tanzania is the largest exporter of Nile perch products to EU; supplies have declined lately; risk of overfishing.
Vietnam	In 2009, it exported USD 4.6 billion worth of seafood and fisheries products. Shrimp (about 40%) and pangasius (about 30%) are the two principal export products, followed by molluscs and tuna. Pangasius production is entirely aquaculture based (traditionally in cages, but now increasingly in ponds).	Part of shrimp production is from wild catch (about one third). Molluscs and tuna are major export products from capture fisheries The bulk of fish and seafood production is consumed locally.

3.1.1. Egypt

The development of modern aquaculture in Egypt began two decades ago and production has increased sharply in recent years. Aquaculture is considered to be the only viable option for reducing the current gap between production and consumption of fish in Egypt [14]. Aquaculture is the main single source of fish supply in Egypt accounting for almost 65% of the total fish production of the country with over 99% produced from privately owned farms. Total aquaculture production in 2008 reached 693,815 t [15]. The total market value amounts to over USD 1.3 billion [14]. Nile tilapia is the most important aquaculture species accounting for more than 55% of the total aquaculture harvest and making Egypt the second largest tilapia producer in the world after China. Whilst semi-intensive aquaculture in earthen ponds is by far the most important fish farming system in Egypt, intensive systems in both tanks and cages have witnessed rapid development during recent years. However, Egypt is still a net importer of fish.

3.1.2. Ghana

The fisheries sector in Ghana is a key contributor to gross domestic product (GDP), export income, people's diet and food security. Most of the catch comes from marine fisheries (400,000 t annually) followed by inland waters (40,000 t) and aquaculture (5,000 t). However, a growing population and declining national catch has meant that imports, currently running at approximately 430,000 t and mostly of low quality fish, account for nearly 50% of national consumption. The Ghanaian capture sector has been declining over the last decade and therefore the only opportunity for import substitution would appear to be the aquaculture sector, although significant technical and financial challenges

have to be addressed if this sector is to grow from its current low level.

3.1.3. Maldives

Fishing, processing and marketing of tuna is a traditional activity in the Maldives. Key value chains include the pole and line fishery for (mainly) skipjack tuna, destined for the canned or pouched tuna market, and the line fishery for (mainly) yellow fin tuna destined for the fresh fish markets in Europe and Japan. Investment during the early 2000s has resulted in the Maldives having a relatively modern fleet and world class fish processing and marketing facilities. Production of fish peaked in 2005/06 with approximately 180,000 t of fish landed, of which about three quarters was skipjack tuna. Beginning in 2007 skipjack tuna suddenly deserted the Maldives' waters in large numbers. The 2006 catch of 138,000 t fell to 97,000 t in 2007 and continued falling, reaching less than 50% of its 2006 level by 2009. The impact on the other species was relatively unchanged over the period. Maldivian fish is exported worldwide.

3.1.4. South Africa

In terms of sectoral contributions to GDP agriculture (including the fisheries sector), in which the bulk of unskilled people are employed, contributes relatively little to the South African economy. The fisheries sector in South Africa is primarily marine-based with a strong commercial sector. The aquaculture sub-sector is almost insignificant. The total commercial catches fluctuate annually. Recent figures report about 674,000 t of annual commercial catch [16]. Measured by exports, Western Cape Province is by far the most important area for the South African fisheries industry, squid and tuna being some of the

prominent species. The other provinces export very little or no fishery products.

3.1.5. Tanzania

Primary sector activities constitute the backbone of the Tanzanian economy. According to the *Poverty and Human Development Tanzania* country report, agriculture, hunting and forestry contributed 24.0% of GDP in 2008, down from 29.6% in 1998 [17]. Fishing contributed 1.5% to GDP in 2008, compared to 1.8% in 1998. The sector also creates significant employment (e.g. for fishers, processing factory workers, and workers in ancillary services). The fisheries sector in Tanzania is dominated by the artisanal Nile perch fishery on Lake Victoria and the Nile perch export trade is a major foreign exchange earner [18]. The industry faces two significant problems, namely declining stocks and competition from pangasius fillets [19].

3.1.6. Vietnam

It is estimated that Vietnam's fisheries and aquaculture sector, which has undergone rapid development during the last two decades, now accounts for approximately 3% of GDP and provides employment for up to four million people. In 2009 Vietnam exported USD 4.6 billion worth of seafood and fisheries products. Shrimp (about 40%) and pangasius (about 30%) are the two

principal export products. Shrimp production appears lucrative for aquaculture farmers, as long as they do not face problems with diseases, but pangasius farmers have been struggling in the recent past and some have gone out of business due to low margins.

3.2. Capital needs in capture fisheries and the aquaculture sector

This section presents the capital needs of both capture fisheries and the aquaculture sector as indicated by the interviewees during the fieldwork. The results are summarised in Table 2.

3.2.1. Capture fisheries

The main investment costs in capture fisheries are for boats and gear. For example, 70% of the total Ghanaian catch is from artisanal marine fisheries and these have a relatively high set-up cost of approximately USD 28,000 to USD 47,000 for canoe, outboard motor and nets depending on the location (e.g. Tema or Cape Coast). Running costs are required for fuel, food and crew wages. Inland fisheries require lower capital costs of approximately USD 9,500 for canoe, motor and nets.

In contrast, Tanzanian Nile perch fishers/ boat owners on Lake Victoria have the following capital requirements: a new boat with engine (about 10–15 hp) and equipment would cost USD 5,330–USD 6,670, nets and the engine being the main cost elements. A

Table 2

Access to finance by fisheries and aquaculture SMEs and challenges.

Source: Interviews with key-informants and semi-structured interviews with key-stakeholders.

	Access to Finance	Challenges
Egypt	Several large companies provide inputs (in particular feed and seed) to fish farmers on credit (interest free). Some traders offer farmers credit for the purchase of inputs.	Lending to SMEs, which represent more than 90% of private companies in Egypt, remains an untapped segment. Banks are usually hesitant to lend to SMEs due to the perceived risk and lack of registration of SMEs. Poor access to formal credit is among the main constraints to the development of fish farming. Farmers who obtain credit from input suppliers and traders are expected to repay the loans as soon as they can at harvest time, usually when the market prices are the lowest.
Ghana	In capture fisheries accessing funds is mostly undertaken through informal arrangements in which women traders are the key financiers for both capital and running costs. Women traders will use their own savings or secure loans from banks. Aquaculture capital costs are more variable, and SME owners use their own funds, or sometimes use bank overdrafts to purchase inputs (feed).	Artisanal marine fisheries have relatively high set-up costs. Fishermen are expected to sell their catch to providers of informal credit. However exact information on repayment terms and conditions were not available. Aquaculture appears to offer more investment opportunities compared to capture fisheries which suffer from declining stocks and high competition.
Maldives	Initial investments (early 2000s) in the fisheries sector were undertaken through development projects financed through loans from organisations such as the World Bank and IFAD. More recently, investment has been provided through other sources, such as buyer credit, commercial credit, savings and equity.	As might be expected, due to the decline in catches, investments have performed poorly in recent years but investors have so far reacted by rescheduling loans rather than forcing foreclosures. In spite of recent events, the fisheries sector continues to operate and innovate. In the absence of any unforeseen external shocks, the likelihood is that it will continue to do so.
South Africa	A typical financial facility for fisheries investments ranges from about USD 35,000 to USD 2.5 million, while the average investment is USD 257,000. Finance providers include the private sector (e.g. Business Partners Ltd); a cooperative (Sea Freeze), or community-based model of lobster fishermen.	The challenges in accessing finance by SMEs include: perceived high risk profile; smaller loan size and cost of delivery; lack of adequate collateral; information gaps; inadequate skills; quality of business propositions; insufficient understanding of SMEs landscape by lenders and investors. In addition, there is heightened uncertainty in fisheries and markets.
Tanzania	New boats with engine and nets can cost up to about USD 6,700. Sources of credit include equity, fish processing company providing interest free loans in the form of cash or equipment, relatives or friends. ROSCAs can be a source of relatively small amounts of loans (e.g. for women fish traders/ processors).	Fishermen tend to have a poor reputation as far as credit is concerned. Few fishermen have obtained loans from MFIs. Due to high capacity in Nile perch fishery, emphasis should be on aquaculture credit.
Vietnam	Aquaculture producers have access to multiple sources of credit, including banks (if title deeds are available, or if they are members of cooperatives), input providers (in particular feed, provided production goes to plan), processing companies, traders, family members, other farmers, or money-lenders.	Market uncertainties can make access to credit more challenging (e.g. pangasius). Operating costs (in particular feed) are high. There used to be insurance schemes in place for aquaculture producers, however these stopped operating due to high, disease-related losses.

new wooden boat without engine may cost about USD 800. Due to the quick turnover, working capital for Nile perch fishing is less of an issue, in that it mainly involves fuel, ice, wages and food for fishermen.

Investment costs involved in the South African squid sector are substantial and include the cost of vessels and permits. Prices range from about USD 43,000 to USD 1.5 million for vessels that vary from ski-boats (7 m) to 20-metre ships. Permits are currently about USD 18,000 per person, while the number of permits ranges on average from 12 to 26 per vessel. Annual running costs here typically include captain's wage USD 60,000, crew USD 100,000, fuel about USD 50,000, other costs and repairs USD 7,000; an estimated total of about USD 217,000.

3.2.2. Aquaculture

Fish farmers in Egypt usually rent land directly from the Government and annual rental costs tend to be rather low at USD 35–85 per feddan (0.42 ha). Conversely, the cost for purchasing the land is substantial, ranging from USD 9,000 to 26,000 per feddan. It is usually only farmers willing to build intensive systems that buy land in order to avoid the risk that the rental contract might not be renewed and that the large initial investment might be lost.

The costs for establishing an intensive production system are considerable at USD 43,000–52,000 per feddan for the construction of the tanks and USD 14,000–21,000 per feddan for the equipment. In desert areas an additional cost relates to the drilling of deep wells that can cost as much as USD 26,000. In contrast semi-intensive production in ponds requires much lower initial capital; pond construction costs between USD 350 and 500 per feddan while the cost for equipment ranges from USD 170 to 500 per feddan.

The running costs of fish farming in Egypt are high. In a semi-intensive production system running costs represent more than 95% of total annual production costs while in the intensive systems, where the annual depreciation of initial investment is large, they stand for over 80% of total annual costs. Feed costs account for around 85% of annual running costs. For instance a SME with annual production of 120 t would require around USD 120,000 per annum to cover running costs, of which USD 100,000 is just for the purchase of feed.

Aquaculture capital costs in Ghana are more variable than for marine fisheries, depending on the nature (e.g. ponds versus cages) and size of the venture. One small- to medium-sized venture reported construction costs of USD 20,000 for six ponds of 0.2 ha each. Also, running costs can be higher and include the purchase of fingerlings (0.6 US cents each), annual water charges (typically USD 500) and good quality imported feed (USD 27 per 25 kg bag) to maximise yields. It was estimated that producing 10,000 kg of fresh fish would require USD 27,000 to cover running costs and bring revenue of USD 33,000.

Cost estimates vary widely in Vietnam but it is assumed that pond construction in a semi-intensive shrimp production system is of the order of USD 5,100–10,300 per hectare. Construction costs in an extensive production system are relatively low at about USD 2,300/hectare whilst they can be as high as USD 35,900/hectare in an intensive system.

Similarly to Egypt, many Vietnamese aquaculture producers prefer to rent land rather than buy it because this is cheaper and is also in line with government policy which discourages the sale of land. Rental of land for shrimp pond construction can be of the order USD 1,000 per hectare per annum, whilst the cost of renting land for pangasius production is higher because of the need for better quality land in freshwater areas. The cost of purchasing land for the construction of pangasius ponds

can be as high as USD 30,000– USD 40,000 per hectare. The actual construction costs for pangasius ponds are of the order of USD 20,500 to 35,900 per hectare. Pangasius production is a capital intensive business in that, according to producers interviewed, operating costs are approximately USD 260,000 per hectare per season (seven months with a yield of around 300 t of fish). Pangasius production operating costs are split as follows: feed 80%, labour 6%, fingerlings 8%, and chemicals/bio-products 6%.

3.3. Sources of finance and constraints to accessing them

This section includes case study examples of sources of finance and constraints to accessing them as emerged during the field-work. In addition to the traditional banking sector the case studies also look at microfinance and the informal lending sector. The results are summarised in Table 2.

3.3.1. Egypt

The case study confirmed the conclusion of previous studies that poor access to formal credit was among the major constraints to the development of fish farming. Both state-owned and private banks are reluctant to finance aquaculture projects because they are unfamiliar with the sector and are not prepared to carry out proper risk assessment analyses. The sector is considered to be highly risky due, among other things, to the concerns about stock mortality. SMEs are in a particular disadvantaged position since most bankers find it difficult to deal with many small businesses wanting small loans. Furthermore, loans are granted only after the verification of the customer's ownership of the land but most of the SMEs in the aquaculture sector do not own the land. Finally the banks ask for specific guarantees and most SMEs are not able to provide them. Accordingly, only large aquaculture enterprises have been able to obtain credit from the formal financial sector, typically at a commercial interest rate of between 12% and 14%. Soft loans to the aquaculture sector have been provided by the Multi Sector Support Programme (MSSP) and the Agricultural Research and Development Fund (ARDF) with interest rates considerably lower than the commercial interest rates (7.5%–9.5%). In both programmes aquaculture SMEs have not been particularly successful in obtaining soft loans offered by the credit lines. For instance, the aquaculture sector represents less than 1.5% of current ARDF outstanding loans. Another source of soft loans for SMEs is the Social Fund for Development (SFD) but, again, the extent of SFD credit provided to the aquaculture sector is very small.

3.3.2. Ghana

Credit organisations such as the African Development Bank have provided loans direct to fishermen when they have been able to provide collateral (such as titled land deeds), references, third-party guarantors and clear evidence of a viable business through records of catches and sales. However, from the fishermen's perspective, the procedures were said to take a long time, something which has discouraged them from taking the formal route. In the aquaculture sector SMEs interviewed had used their own funds generated from other business ventures although they sometimes used a bank overdraft facility to purchase feed in bulk.

3.3.3. Maldives

Initial investments in the fisheries sector were undertaken through development projects financed through loans from organisations such as the World Bank and IFAD (International Fund for Agricultural Development). Other development support was also provided. More recently, investment has been provided through other sources such as buyer credit, commercial credit, savings and

equity. However, due to the decline in catches, investments have performed poorly in recent years, although investors have so far reacted by rescheduling loans rather than forcing foreclosures. In spite of recent events, the fisheries sector continues to operate and innovate. Its development from an artisanal fishery servicing a regional and domestic market to a global player has been aided by a number of factors including the traditional role of fishing in Maldivian culture, the development finance and initial innovation generated through development projects, the tourism sector, and the enabling environment.

3.3.4. South Africa

Three financial models have been identified and examined during fieldwork for the case study in South Africa: (a) Business Partners Ltd; (b) the cooperative model of Sea Freeze; (c) the community-based model of lobster fishermen.

Business Partners Ltd has been financing SMEs in South Africa for over 30 years. It began as a 50%–50% public–private partnership with the government of South Africa but today the respective shareholding is 20%–80%. At the start investment in fisheries constituted 50% of the total portfolio but this has now decreased to about 2%–4%, mainly as a result of current uncertainties in the sector. A typical financial facility for fisheries investments ranges from about USD 35,000 to USD 2.5 million, while a mean investment is USD 257,000. Financial products include loans, equity shares, and royalty fees based on turnover or a combination of all three products. Business Partners finance differs from one operation to another and packages are flexible. The selection criteria are primarily based on the entrepreneur's experience, business risk, quality of collateral, and entrepreneur's own contribution to the business. Key factors explaining the relative success in dealing with the fisheries sector are attributed to Business Partners' extensive technical experience in the sector, building and maintaining relationships of trust with the business people involved in the sector, and a high degree of flexibility in the design of financial packages that reflects the needs of the applicants. There are also challenges, however, which constrain the expansion of finance into the sector. These include uncertainties in the renewal and transferability of fishing rights, foreign exchange risks and the recent decline in the EU demand for local South African fish exports. It is also important to note that Business Partners would need to introduce a system by which long-standing, experienced staff members transfer skills to the younger, newer staff in order to preserve the hard-learned technical expertise of financing for the fisheries sector.

The Sea Freeze Cooperative business was formed by 16 top squid operators and functioned as such for about 12 years until it ceased in practice to be a cooperative in 1997. It is reported to have been very successful, with revenues significantly greater than when members worked individually. Further, that members were part of a successful cooperative helped them when seeking to secure finance as individuals.

Community-based fishermen: Artisanal and small-scale fishing communities remain marginalised from the legal framework in the sense that fishing rights are currently assigned on an individual basis rather than at a community level. Efforts to amend this oversight are being undertaken by community organisers and NGOs. The priorities for the development of small-scale fishing communities include: (a) legal recognition of the community organisation; (b) community-based fishing rights; (c) capacity building in the management of collective business; (d) specialised financial fund for small-scale fishing communities.

3.3.5. Tanzania

Several different sources of capital and credit operate in the Tanzanian Nile perch industry. These include self-financing and

family-financing, processing company financing, and financing through Rotating Savings and Credit Associations (ROSCAs). Microfinancing and financing through NGOs appear to play very little part. Some boat owners have worked their way up in that they started in the 1990s with a relatively small amount of money, perhaps from agricultural production or from inheritance, and now own several boats, sometimes six or more. Relatives can also be a source of funding, typically for smaller amounts which are lent interest-free and short-term. A processing company, which buys the Nile Perch for export, has provided interest free loans to 18 suppliers totalling USD 179,000 in the form of cheques or cash, plus USD 167,000 for engines and nets. ROSCAs can also be a source of relatively small amounts of credit, in particular also for women fish traders/processors.

According to the majority of microfinance institutions/NGOs met in Tanzania, fishermen tend to have a poor reputation as far as loans are concerned. This is because they have no collateral to offer or because money has been lost due to missing boats or investment in the wrong type of business. Larger fish suppliers, who can typically provide collateral, can obtain credit but this may be for other businesses such as hotels.

3.3.6. Vietnam

Based on discussions with shrimp producers and other stakeholders SME type shrimp aquaculture producers can obtain credit from bank (such as the Bank for Investment and Development of Vietnam—BIDV) in certain circumstances: (a) if title deeds to a house or land (known as a “red certificate”) is available as collateral; (b) if the farmer is a member of a group or cooperative (so-called trust loan). Loans are at a commercial rate of 12%–13% p.a.

Based on interviews with pangasius farmers it appears that credit is not available for fixed costs, an approach which seems to be in line with government policy to limit the expansion of pangasius production. However, credit for working capital is available; half of this can be obtained from banks at monthly interest rates of 1% to 1.5% with a further quarter from the feed supplier. At the beginning of production feed has to be paid in cash. However, when the feed supplier sees that production is showing great potential the farmer can get feed on credit, in particular during the last two months before the harvest. The price of feed is slightly lower if no credit is involved. The farmer has to cover the remaining quarter of the working capital, perhaps by using equity or obtaining a loan from friends.

4. Discussion

Four of the six case studies undertaken as part of this project had a strong focus on capture fisheries either in a marine environment (Ghana, Maldives, and South Africa) or as part of inland fisheries (e.g. Nile perch fishery in Lake Victoria). All four of these case studies highlight difficulties in the capture sector related to declining supplies or market uncertainties. In particular, during the past five years these difficulties have negatively impacted on the performance of the sector.

Whilst the sector was often booming in the early 2000s the more negative outlook and overcapacity in the capture and processing facilities make access to credit now a less pressing issue in capture fisheries. The four case studies reveal a diverse range of credit sources including equity, development banks (e.g. Maldives), public-private specialist investment group targeting SMEs, and also cooperative business (both in South Africa), women traders/processors (e.g. Ghana), and processing factories (e.g. Tanzania).

Compared to capital costs operating costs are relatively small in capture fisheries as turnover tends to be fast. In particular, this is the case in the artisanal, small-scale sector fisheries (e.g. Ghana and Tanzania), where labour, fuel, and ice are the main operating expenditures. Larger-scale capture fisheries such as in South Africa also need working capital for these items in addition to more specific items such as licenses and other costs.

In some ways, the opposite is true for aquaculture in that operating costs, and feed in particular, represent the bulk of production expenditures. While traditional pond based aquaculture facilities are relatively inexpensive to establish, intensive systems also require a substantial capital outlay (e.g. tilapia farming in Egypt, and shrimp and pangasius in Vietnam).

However the case studies confirm that the poor access to credit is one of the major constraints. The challenges in accessing finance by SMEs include: perceived high risk profile; small loan size and cost of delivery; lack of adequate collateral; information gaps; inadequate skills; quality of business propositions; insufficient understanding of SMEs landscape by lenders and investors.

Particular difficulties in the fisheries sector include: information asymmetry (i.e. promoters lack business acumen to fully articulate their ventures to funders); at the same time potential financiers lack expertise in appraising fisheries projects and conducting proper risk assessments. Establishing a venture fund is challenging and lengthy as is accessing local capital. Limited incubation and lack of project preparation facilities that assist fisheries and aquaculture entrepreneurs to develop their ideas into bankable deals limit the pool from which investors can mine potential fisheries and aquaculture investments.

Lenders, and not only micro-finance institutions (MFIs), ought to develop more credit and savings products targeting the SME sector. Related government policies and regulations are a first step into this direction. A key requirement appears to be more emphasis on better financial management by fisheries and aquaculture SMEs. This should assist them to obtain credit but also improve their access to appropriate savings facilities. Improved information flows should help to reduce negative perceptions about the riskiness of SME investments, and help potential lenders to obtain a better picture of businesses and their ability to reimburse loans.

Private equity funds—collective investment schemes targeted typically at specific sectors for a fixed term such as ten years—take a long-term approach and generally fall into two sub-categories, namely venture capital funds, which target start-ups or provide funding for early development or expansion, and later-stage funds, which target established companies and provide mezzanine funding, perhaps for further expansion or to cover mergers or acquisitions.

Appropriate monitoring and performance measurement needs to be put in place to follow up on loans. Equally, financial institutions require communication strategies that are able to cater for communities in less accessible rural areas. Challenges that need to be tackled in a cooperative context, include (a) improved management skills; (b) decision-making mechanisms to address diverse interests within the cooperative; and (c) trust-building mechanisms.

Despite difficulties in the past, the issue of insurance in a fisheries and aquaculture context merits continued attention. For example, development and research programmes that aim to manage risks in agricultural production and marketing should include components on fisheries and aquaculture [20–22].

The contexts under which fisheries and aquaculture operate in the six countries studied in this paper are different, revealing diverse challenges and opportunities. Yet a common thread is that traditional banks remain reluctant to provide finance for this type of enterprise and in consequence SMEs in the sector still tend to

depend on rather informal financial arrangements such as those provided by input suppliers and processing companies. Despite the presence of donor finance in some instances private involvement is imperative if aquaculture production is to grow and become sustainable. In this effort hybrid financial models need to be encouraged whereby private investment can work with donor funding in order to support valuable SME investment opportunities.

Critically for SMEs, finance in the form of credit, savings, and insurance are not the only required services. Equally important are services in support of business development, record keeping and financial literacy. Therefore effective financial models need to incorporate elements of broader enterprise development for aquaculture to become a key contributor to food security and sustainable income-generator in Africa.

5. Conclusions

Developing countries face a key challenge in stimulating the necessary growth of fish production, particularly in the development of the aquaculture sector because of the declining stock levels faced by capture fisheries. In particular, further development of the sector is necessary in Africa in order to stimulate local supplies for food security and income generating activities. Governments of countries such as Kenya have recognised this necessity and are developing fish farming in order to boost economic prospects of the rural population [23].

An important finding of this study is the inability or reluctance of traditional formal financial services to meet the needs of SMEs in the least developed countries, particularly in Africa. In these countries small and medium-scale aquaculture and fisheries enterprises still rely predominantly on informal sources of credit that, while important, are often either inconsistent or have unfavourable terms and conditions.

In order to achieve this, certain difficulties need to be overcome. These include lack of experience and under-resourced extension and veterinary services in countries where aquaculture is comparatively new. Furthermore, supply chains for inputs (seed/ fingerlings, feed, and veterinary drugs) and the output (fish and fish products) need to be created or strengthened. However, the present study confirm that the poor access to credit is one of the major constraints.

There are some examples where global financiers are investing in SMEs employing innovative financial models to create sustainable enterprises, which could serve as a useful basis to pave the way forward for aquaculture in Africa. In this regard, one key characteristic of investment funds specialising in SMEs in Africa is the combination of investment funds with business development funds in order to ensure the economic growth of SMEs as well as the likelihood of prompt loan repayment (see Fig. 1). These innovative financial models for SMEs seek to fill the gap between traditional banking and grant-based donor finance. Hybrid business models that can leverage the best aspects of philanthropy and business can help build sustainable, scalable enterprises. The delivery of investment and business development for SMEs can be done directly or through intermediaries.

Other forms of innovation include utilising SME purchase agreements as collateral, specialised financial intermediaries and multilateral agencies acting as co-lenders and risk-sharing of loans to SMEs, and industry partners assisting in developing the economic growth of SMEs and ensuring market access.

Business development support from a group of talented management professionals with knowledge of financial accountability, operations, and international/national markets in the fisheries sector—in order to serve as advisors and talent-enablers to SMEs is crucial.

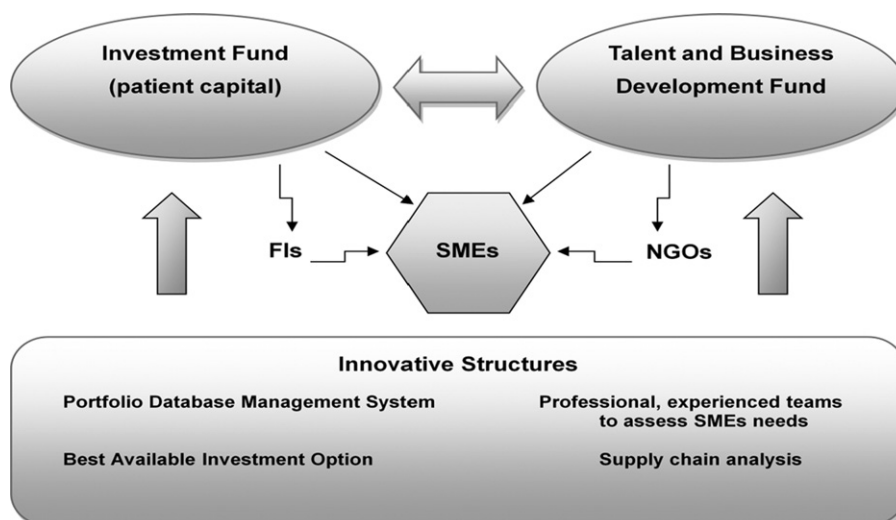


Fig. 1. Hybrid Business Model of Innovative Finance for SMEs.
Source: Marr and Chiwara [24].

Key interventions to help increase financial access by companies in the sector include [25]: (a) exit strategies; (b) incubation facilities; (c) business angels (i.e. private investors who invest in unquoted small and medium sized businesses); (d) funds of funds (i.e. mutual fund that invests in other mutual funds); (e) policy and regulatory reforms. The key intervention is to promote financial market growth in Africa to address exit strategy challenges such as: (a) small African capital exchanges; (b) restriction on listing of foreign companies; (c) share buyback restriction; (d) inadequate double taxation agreements. The business incubation sphere in Africa is very young and underdeveloped compared to other developing countries in the world and efforts should be devoted to address this issue. SMEs in Africa can also benefit from the formation of business angel networks in combination with the establishment of incubators and investment funds. Amendments to stringent policies that hinder access to key sources of local capital in Africa today are essential (e.g. restrictions on illiquid investments by pension funds and insurance companies, which can serve as investment vehicles targeting SMEs).

Developing country governments in Africa are aware of the challenges facing the sector and the need to promote sectors such as aquaculture in order to maintain the present per capita consumption on the continent. Indeed, some innovative approaches are being undertaken. The Kenyan government has invested USD 10 million in the creation of 100 fish ponds in each of the country's 140 constituencies. However, further long-term and sustainable development of a sector that is so capital-intensive requires private sector investors who have access to the necessary financing, management skills and technology, and an enabling environment that addresses challenges with key areas such as infrastructure, transport and financial incentives.

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